

Remarks

Status of the claims

By the present amendment, claims 1, 5, 12, 21, 24, 41, 49, and 59 have been amended. No new matter has been added.

Objections and Rejection under 35 U.S.C. 112

The Examiner has objected to and rejected under 35 U.S.C. 112, second paragraph, claims 5, 24 and 48 for the reasons noted in the Office Action. These objections and rejections have been overcome by the above amendments to the noted claims. Withdrawal is respectfully requested.

Rejections under 35 U.S.C. 103(a)

Claims 1, 2, 6-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott et al (US 5,669,979) in view of Sakuma et al (US 5,270,247), DiMeo Jr. et al (US 5,972,430) and further in view of Tseng et al (EP 704551). Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott et al in view of Sakuma et al, DiMeo Jr. et al and Tseng et al as applied to claim 1 above, and further in view of Vaught (US 5,023,424). Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al in view of DiMeo Jr. et al and further in view of Elliott et al. Claims 19, 21, 24, 25, 27, 33, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al, DiMeo Jr. et al and Elliott et al as applied to claim 12 above, and further in view of Vaught. Claims 41, 42, 45-47, 49 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al, Elliott et al, Vaught, DiMeo Jr. et al, and further in view of Tseng et al. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al, Elliott et al, DiMeo Jr. et al and further in view of Omstead et al (US 6,544,341). These rejections are respectfully traversed in view of the following comments.

None of the cited references, individually or taken together, teach or suggest the limitation "evacuating a purge gas and any gases/residuals in vicinity of said purge gas to prevent mixing of the precursor and input gases while said precursor gas and said input gas are simultaneously provided" as recited by amended independent claim 1.

None of the cited references, individually or taken together, teach or suggest the limitation "preventing the mixture of said precursor gas and said input gas with a purge gas while said precursor gas and said input gas are simultaneously provided" as recited by amended independent claim 12.

None of the cited references, individually or taken together, teach or suggest the limitation "preventing mixture of said precursor gas and said input gas with a purge gas while said precursor gas and said input gas are simultaneously provided" as recited by amended independent claim 21.

None of the cited references, individually or taken together, teach or suggest the limitation "evacuating said purge gas and any gases/residuals in vicinity of said purge gas to prevent mixing of the precursor and input gases while said precursor gas and said input gas are simultaneously flowed into said reaction chamber" as recited by amended independent claim 41.

None of the cited references, individually or taken together, teach or suggest the limitation "providing a purge gas flowing from said dispensing unit while simultaneously pumping out at least said purge gas also with said dispensing unit to prevent mixing of said precursor gas and said input gas by creating a pump/purge barrier therebetween" as recited by amended independent claim 59.

Please note, the above amendments are not made for reasons of patentability to overcome the cited art as it appears that the piecemeal fashion used to string together the various steps from the cited references for the reason of "creating a time efficient method of successfully forming a monolayer" as asserted by the Examiner for the basis of combining reference is based on impressive hindsight. Due to the unpredictability of the number of choices and conflicting teachings confronted with one skilled in the art in view of the teachings of these cited references,

when read as a whole, it is asserted that a prima facie case of obviousness has not been established. For example, why for the reason of "creating a time efficient method of successfully forming a monolayer" would one skilled in the art decide to look far a field to the cleaning methods/systems of Elliot et al. and Vaught for suitable and predictable modifications to be used for providing a method of successfully forming a monolayer? Apparently, the reason why Elliott is silent with regards to flowing simultaneously precursor, purge, and input gases into the chamber and evacuating the purge gas/residual in the vicinity of the purge gas as mentioned in the Office Action has been overlooked. Moreover, if the cleaning system of Elliott is modified as suggested by the Examiner to be a deposition system, then Elliott's system would be rendered inoperable for its intended purposes of providing a method of cleaning a substrate surface. See the Abstract. As the Examiner is well aware, if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP 2143.01 (V).

Vaught suffers from the same problem as Elliott as it too is a cleaning system which uses a laser to induce shock waves to dislodge particles from a wafer surface. See the Abstract. For example, how would one skilled in the art predictably incorporate the cited cleaning elements of Vaught into the cited deposition system of either Sakuma et al., DiMeo Jr. et al, Omstead et al., and Tseng et al. to "creating a time efficient method of successfully forming a monolayer" when Vaught teaches using the laser generated pressure waves to blow particles away? This uncertainty is further emphasized by the fact the Vaught explicitly teaches that "each shock wave has a peak pressure gradient sufficient to dislodge and remove any particle on the surface in the vicinity of the shock wave's point of origin." Col. 2, lines 43-46. Therefore, in view of the teachings of Vaught, it is not predictable that Vaught's shock wave would help create "a time efficient method of successfully forming a monolayer" but rather the opposite. As the Examiner is well aware, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Accordingly,

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distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter "as a whole." MPEP 2141.02.

Clearly as such cleaning methods of Elliot et al. and Vaughn are not easily and predictably combined with the deposition methods of Sakuma et al., DiMeo Jr. et al, Omstead et al., and Tseng et al. when read as a whole, there is no reasonable expectation of success supporting a conclusion of obviousness with the Examiner's asserted combinations of references.

Conclusion

The Applicant respectfully submits that the present application is in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this amendment. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
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